Essay #4:
What impact have your contributions made with regard to making a positive difference in Agency decisions, influencing the direction of environmental programs and policies, defining new critical issues, and advancing your scientific area of expertise? Describe how your work products (including peer-reviewed journal articles, assessments, technical reports, models, tools, policy and guidance documents or briefings) have influenced Agency actions or advanced a particular area of science. Discuss your personal role in both serving on and leading teams, and how your efforts contributed to the broad goals and objectives of the team. List any recognition or awards received for these contributions. [GS-14 candidates should be recognized throughout the Agency and professional societies as a technical expert serving on scientific committees and providing credible advice and support for other professionals and staff engaged in field or regional operations. The candidate should provide details on the impact of their work on major programs in the Agency or the direction of and state of the science in their area of expertise. Note that this question is oriented to allow the candidate to showcase their accomplishments, describing the most significant things they have done and what impact it had on the Agency and the national and international scientific community.]

My contributions (journal articles, Integrated Risk Information System (IRIS) assessments, technical reports, guidance documents and briefings) have influenced Agency actions or advanced science in the following ways.

Toxicity Assessments and Publications:

- Providing hazard identification, human health risk estimates, exposure scenario expertise and developing risk-based toxicity values for remedial and removal actions for Superfund (see essay #1) allowed for a quick response for the Regions and Program offices concerning site related risks thus informing site risk decisions which ultimately supported the Agency's mission to protect public health.
- Providing critical support during the regional EPA's World Trade Center Disaster Response in 2001 (see essay #1; award received) by preparing summaries and daily briefings on contaminant levels and potential public health impacts provided the Agency with a means to present data transparently and supported the Agency's mission to protect human health.
- Contributing to the development of national Guidance for Probabilistic Risk Assessment (PRA) (see essay #3) helped advance the Agency's ability to determine, with less uncertainty, human health risks from environmental exposures.
- Authoring several IRIS assessments (as primary technical lead for, *1,2 dichlorobenzene and 1,3 dichlorobenzene; cis and trans-1,2 dichloroethylene, and ammonia (inhalation)* provided toxicity reference values. IRIS toxicity values are regarded worldwide as an authoritative source of toxicity information (see essay #2) and are used in a variety of decision-making analyses by EPA and other agencies. For context, due to their complexity and extensive review, the level of effort to complete one complete draft or finalized IRIS Toxicological Review is considered approximately equivalent to 3-5 peer-reviewed manuscripts.
- Providing expertise and scientific judgement in the development of more than 40 Provisional Peer Reviewed Toxicity Values (PPRTVs) (see essay #1 and 2; received

awards, 2004, 2006) enabled Programs and Regions to develop timely hazard and risk evaluations.

Systematic Review Training and Standard Operating Procedures (SOPs) development:

- Providing training in cutting-edge systematic review software, study evaluation, data extraction and quality control and in collaborative harmonization methods for conducting systematic review within EPA (Office of Pollution Prevention and Toxics (OPPT) and for external partners (Agency for Toxic Substances and Disease Registry (ATSDR), Texas Commission on Environmental Quality (TCEQ) and Department of Environmental Science and Analytical Chemistry (ACES)) can potentially reduce duplicative work efforts across assessment programs worldwide.
- Developing SOPs that reflect efficient and pragmatic application of a systematic review process that can be deployed in IRIS, PPRTV, and OPPT assessments (see essay # 1) is instrumental in helping to harmonized systematic review methods used across EPA, including by EPA staff and contractors.
- Tailoring an innovative approach (evidence mapping) for rapid systematic review of assessments (see essay #2, acrolein systematic evidence map manuscript) can inform decision-making and risk management priority setting.
- Using systematic review tools to screen, perform study evaluation, direct and track data extraction and clean up for over 12 chemicals (phthalates, naphthalene, chloroprene, carbon disulfide, carbon tetrachloride, perchloroethylene, ammonia (oral), PFAS, benzene, mercury salts, ethylbenzene, HBCD, triphenyl phosphate, etc.) and for several assessments I am leading (chloroform, cumene, uranium (planned)) could improve quality, transparency and consistency across assessments and make the process more efficient.

Epidemiology Support for the IRIS program, Chemical and Pollutant Assessment Division (CPAD) and Office of Pollution Prevention and Toxics (OPPT)

- Developing and testing various outcome-specific study evaluation protocols (see essay #2) advanced epidemiology study evaluation capabilities for IRIS and external partners by providing criteria and rating guidelines for study evaluation where none existed before.
- Providing epidemiology advice for the IRIS program, CPAD and OPPT in the evaluation of epidemiology studies aided the development of assessments and evidence maps across the IRIS program, CPAD and OPPT.
- Providing critically needed epidemiology and systematic review support for OPPT (see essay #1 and 2; award received) helped OPPT meet requirements associated with OPPT chemical risk evaluation, a high priority for the Agency requiring a rapid turnaround.

Risk Assessment Forum (RAF) (see essay #3):

- Chairing the Subcommittee on Research Planning for Cumulative Risk Assessment (CRA) and providing direction, priorities and perspective to Research Planning where none existed before, advanced the field of CRA.
- Developing, organizing and implementing a Workshop in CRA (2014) advanced the field of CRA by engaging Agency decision makers in determining when and why CRA would

be useful in decision making.

- Assisting in the development of the current draft CRA Guidance titled 'Guidance for Cumulative Risk Assessment; Planning and Problem Formulation, (revised Risk Assessment Forum Review Draft, 2019), as a member of the CRA writing team, could advance the field of CRA and provide the Agency with better support tools for risk management.
- Authoring, with other scientists across the Agency, the Guidance for Applying Quantitative Data to Develop Data-Derived Extrapolation Factors for Inter-Species and Intra-Species Extrapolation, enabled the Agency to reduce uncertainties in developing RfDs, RfCs, or related metrics/approaches (e.g., hazard index, margin of exposure) and thus advanced risk assessment.